

Application/Control Number: 09/557,289

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Cancelled claims 1-56

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57. A laser structure, comprising:

an active region;

a first electrical contact disposed on a first surface of said laser structure;

a second electrical contact, said active region being disposed between said first and second electrical contacts;

a first current blocking layer, said first current blocking layer being subject to physical change when exposed to a preselected agent;

first means for selectively exposing a portion of said first current blocking layer to said preselected agent to define a first unchanged region of said first current blocking layer surrounded by a first changed region of said first current blocking layer, said first unchanged region of said first current blocking layer being aligned with a preselected region of said active region, said first changed region being electrically insulative, said first unchanged region being electrically conductive;

wherein said first means for selectively exposing includes at least one etched depression extending from said first surface of said laser structure into the body of said laser structure and through said first current blocking layer to expose a portion of said current blocking layer to said preselected agent during manufacture of said laser structure.

58. The laser structure of claim 57, wherein: said laser structure is a vertical cavity surface emitting laser.

59. The laser structure of claim 57, further comprising:

a second current blocking layer, said second current blocking layer being subject to change when exposed to said preselected agent;

means for selectively exposing a portion of said second current blocking layer to said preselected agent to define a second unchanged region of said second current blocking layer surrounded by a second changed region of said second current blocking layer, said second unchanged region of said second current blocking layer being aligned with said preselected region of said active region, said second changed region being electrically insulative, said second unchanged region being electrically conductive, said first and second unchanged regions being aligned with each other to define a current channel extending through said preselected region of said active region; and

said means for selectively exposing a portion of said second current blocking layer further comprises at least one etched depression extending from said first surface of said laser into the body of said laser structure and through said second current blocking layer to expose a portion of said second current blocking layer to said preselected agent during manufacture of said laser structure.

60. The laser structure of claim 57, wherein: said laser structure comprises a substrate portion, a lasing portion disposed on said substrate portion, a contact support portion disposed on said substrate portion, and a bridging portion disposed on said substrate portion, said bridging portion connected between said lasing portion and said contact support portion, said first current blocking layer being exposed at a surface of said lasing

portion.

61. The laser structure of claim 59, wherein: said laser structure comprises a substrate portion, a lasing portion disposed on said substrate portion, a contact support portion disposed on said substrate portion, and a bridging portion disposed on said substrate portion, said bridging portion connected between said lasing portion and said contact support portion, said first and second current blocking layers being exposed at a surface of said lasing portion.

62. The laser structure of claim 57, wherein: said preselected agent is an oxidizing agent and said physical change is oxidation.

63. The laser structure of claim 62, wherein: said oxidizing agent is water vapor.

64. The laser structure of claim 57, wherein: said preselected agent is an etchant.

65. The laser structure of claim 64, wherein: said etchant is an acid.

66. The laser structure of claim 57, wherein said first means for selectively exposing further comprises: four etched depressions extending from said first surface of said laser structure into the body of said laser structure and through said first current blocking layer to expose a plurality of portions of said current blocking layer to said preselected

agent during manufacture of said laser structure.

67. The laser structure of claim 57, further comprising:

an first mirror structure comprising a first plurality of layers;

a second mirror structure comprising a second plurality of layers, said active region being disposed between said first and second mirror structures.

68. The laser structure of claim 59, wherein: said means for selectively exposing a portion of said second current blocking layer further comprises four etched depressions extending from said first surface of said laser structure into the body of said laser structure and through said second current blocking layer to expose a plurality of portions of said second current blocking layer to said preselected agent during manufacture of said laser structure.

69. A laser structure, comprising:

an active region;

a first electrical contact disposed on a first surface of said laser structure;

a second electrical contact, said active region being disposed between said first

5 and second electrical contacts, said laser structure being a vertical cavity surface emitting laser;

a first current blocking layer, said first current blocking layer being subject to

8 oxidation when exposed to an oxidizing agent;

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a second current blocking layer, said second current blocking layer being subject
to oxidation when exposed to said oxidizing agent;

a first means for selectively exposing a portion of said first current blocking layer
to said oxidizing agent to define a first nonoxidized region of said first current blocking
layer surrounded by a first oxidized region of said first current blocking layer, said first
nonoxidized region of said first current blocking layer being aligned with a preselected
region of said active region, said first oxidized region being electrically insulative, said
first nonoxidized region being electrically conductive;

second means for selectively exposing a portion of said second current blocking
layer to said oxidizing agent to define a second nonoxidized region of said second
current blocking layer surrounded by a second oxidized region of said second current
blocking layer, said second nonoxidizing region of said second current blocking layer
being aligned with said preselected region of said active region, said second oxidized
region being electrically insulative, said second nonoxidized region being electrically
conductive, said first and second nonoxidized regions being aligned with each other to
define a current channel extending through said preselected region of said active region;
and

wherein said first means for selectively exposing and said second means for
selectively exposing include at least one etched depression extending from said first
surface of said laser structure into the body of said laser structure and through said first
and second current blocking layers to expose a portion of said first and second current
blocking layers to said preselected agent during manufacture of said laser structure.

70. The laser structure of claim 69, wherein: said laser structure comprises a substrate portion, a lasing portion disposed on said substrate portion, a contact support portion disposed on said substrate portion, and a bridging portion disposed on said substrate portion, said bridging portion connected between said lasing portion and said contact support portion, said first and second current blocking layers being exposed at a surface of said lasing portion.

71. The laser structure of claim 70, wherein: said first and second current blocking layers comprise an aluminum bearing material.

72. The laser structure of claim 70, wherein: said oxidizing agent is water vapor.

73. The laser structure of claim 69, wherein: said first and second means for selectively exposing further include four etched depressions extending from said first surface of said laser structure into the body of said laser structure and through said first and second current blocking layers to expose a plurality of portions of said current blocking layers to said preselected agent during manufacture of said laser structure.

74. A laser structure, comprising:

an active region;

} a first electrical contact disposed on a first surface of said laser structure;

a second electrical contact, said active region being disposed between said first
5 and second electrical contacts, said laser structure being a vertical cavity surface
emitting laser;

a first current blocking layer, said first current blocking layer being subject to
oxidation when exposed to an oxidizing agent;

a second current blocking layer, said second current blocking layer being subject
10 to oxidation when exposed to said oxidizing agent;

first means for selectively exposing a portion of said first current blocking layer to
said oxidizing agent to define a first nonoxidized region of said first current blocking
layer surrounded by a first oxidized region of said first current blocking layer, said first
nonoxidized region of said first current blocking layer being aligned with a
15 preselected region of said active region, said first oxidized region being electrically
insulative, said first nonoxidized region being electrically conductive;

second means for selectively exposing a portion of said second current blocking
layer to said oxidizing agent to define a second nonoxidized region of said second
current blocking layer surrounded by a second oxidized region of said second current
blocking layer, said second nonoxidized region of said second current blocking
layer being aligned with said preselected region of said active region, said second
oxidized region being electrically insulative, said second nonoxidized region being
electrically conductive, said first and second nonoxidized regions being aligned with
each other to define a current channel extending through said preselected region
of said active region; and

wherein said first and second means for selectively exposing further comprise at least one etched depression extending from said first surfaces of said laser structure into the body of said laser structure and through said first and second current blocking layers to expose a portion of said current blocking layers to said preselected agent during manufacture of said laser structure.

75. The laser structure of claim 74, wherein: said laser structure comprises a substrate portion, a lasing portion disposed on said substrate portion, a contact support portion disposed on said substrate portion, and a bridging portion disposed on said substrate portion, said bridging portion connected between said lasing portion and said contact support portion, said first and second current blocking layers being exposed at a surface of said lasing portion, said first and second current blocking layers comprise an aluminum bearing material, said oxidizing agent being water vapor.

76. The laser structure of claim 74, further comprising:

a plurality of etched depressions extending from said first surface of said laser structure into the body of said laser structure and through said first current blocking layer to expose a plurality of portions of said current blocking layer to said oxidizing agent during manufacture of said laser structure.

77. The laser structure of claim 74, wherein: the first and second means for exposing further include four etched depressions extending from said first surface of said laser

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structure into the body of said laser structure and through said first and second current blocking layers to expose a plurality of portions of said current blocking layers to said preselected agent during manufacture of said laser structure. --

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